Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_

**Nitrogen and Carbon Cycles Review**

Part 1: The Nitrogen Cycle

Go to <http://www.learningscience.org/esc3bgeochemicalcycles.htm> and go to Web Visual Lesson 2 to see an animated nitrogen cycle. View the cycle and then answer the questions 1-5.

1. List the fluxes in the nitrogen cycle?
2. Which process puts nitrogen back into the atmosphere? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Which process changes nitrogen gas into a form that plants can use? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Which process supplies animals and fungi with nitrogen? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. What organism is required to run the nitrogen cycle? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Part 2: The Carbon Cycle

Select Web Visual Lesson 3 to see an interactive carbon cycle. Move the carbon atom (black ball) from one reservoir to another and select the correct process that allows it to happen. Answer questions 6-10.

1. What are the two types of plants found in the carbon cycle?
2. In what form do plants take in carbon? What process allows them to take it in?
3. How does the carbon in plants get to consumers?
4. List the processes involved in moving a carbon atom from the atmosphere to carbonate rock?
5. What process can take carbon out of rock and return it to the soil?

Part 3: The Water Cycle

Select Web Visual Lesson 1 to see a set of water cycle resources. Play the animation. Answer questions #11-14

1. Water in the water cycle can be physically moved, but also changed how?
2. What percentage of earth’s water is fresh and available for human, animal, and plant use?
3. Is water in the atmosphere considered a sink or a reservoir? Why?
4. Is water frozen at the poles considered a sink or a reservoir? Why?

Select the Global Warming Activities to the right and answer the following questions

1. Explain how higher temperatures could locally influence the water cycle and lead to drought. (Hint: Think about which water cycle process happens fastest when it's hot.)
2. Global sea level has risen approximately 10" in the last 100 years. It is predicted to rise another 3" to 37" by 2100. Even more dramatic increases are possible over several centuries. Explain the relationship between sea level and ice based on your knowledge of the water cycle.

Select the Groundwater Use and Overuse Simulation to the right and answer the following questions.

1. Describe what happens to groundwater when the rate of pumping is less than the rate of infiltration.
2. Describe what happens to water levels when the rate of pumping is greater than the rate of infiltration.

Overuse of groundwater can cause wells to dry up. This often leads to expensive and ultimately futile attempts to keep up with the dropping water table by drilling deeper and deeper wells. Other serious consequences can also follow groundwater overuse.

1. What happened to the stream as the water table dropped? What would have happened if that water body wasn't a stream, but an ocean?

Part 4: Compare and Contrast

1. What are three ways the carbon cycle and the nitrogen cycle are similar?
2. What are what two ways the cycles are different?
3. What effect have humans had on the carbon cycle?
4. What effect have humans had on the nitrogen cycle?
5. Why are both elements important?
6. What are two effects have humans had on the water cycle?

Potassium and Phosphorus Cycles (K and P cycles)

1. Locate your own resources for these two cycles. Print out your favorite diagram, then identify the fluxes, sinks, and reservoirs for these cycles.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Flux | Reservoir | Sink |
| Potassium Cycle (K) |  |  |  |
| Phosphorus Cycle (P) |  |  |  |